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Total No. of Pages : 02

Total No. of Questions : 07

B.Sc.(Computer Science) (2013 & Onwards)

(Sem.-4)

NUMBER THEORY

Subject Code : BCS-401

M.Code : 72317

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION-A**1. Answer the followings in short :**

- (a) Find G.C.D. of (49,210,350).
- (b) Show that n is odd iff $n \equiv 1 \pmod{2}$.
- (c) Give an example to show that if $ab \equiv 0 \pmod{m}$, then $a \not\equiv 0 \pmod{m}$ and $b \not\equiv 0 \pmod{m}$.
- (d) Solve the linear congruence : $9x \equiv 21 \pmod{30}$.
- (e) State Euclidean algorithm.
- (f) State Euler's theorem.
- (g) State Wilson's theorem.
- h) Define Euler phi function.
- (i) Calculate the value of $\varphi(360)$.
- (j) For $n > 2$, $\varphi(n)$ is an even integer.

SECTION-B

2. Prove that the numbers of primes are infinite.
3. Find values of x and y to satisfy $71x - 50y = 1$.
4. State and prove Fundamental theorem of Arithmetic.
5. State and prove Chinese remainder theorem.
6. State and prove Mobius inversion formula.
7. State and prove Fermat's theorem.

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NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.